

### **ABSTRACT OF THE DISCLOSURE**

The present invention relates to the design and use of multi-axis force sensors for applications such as human-robot interaction. A compliant and easily constructed flexure element for use in controlling the range of motion of a force sensor in response to applied forces and torques is presented. Two- and three-axis embodiments of the flexure element are disclosed. Devices and methods for reading out the deflection of the flexure element to determine an applied force along a single axis are presented as well. The read-out mechanism can employ optoelectronic measurement devices and methods. The optoelectronic sensor can be implemented with the two- or three-axis embodiment of the flexure element. Additionally, a force sensor based on an inductive read-out technique is presented. The described inductive sensor uses the two-axis flexure element.